

WHAT IS CLAIMED IS:

1. A disk loading device comprising:

a tray driving mechanism configured to move a tray capable of placing a disk thereon between a position taken out from a cabinet and a position stored in the cabinet according to the driving force applied from the outside;

a disk driving section driving mechanism configured to move a disk driving section to mount, rotate and drive the disk placed on the tray stored in the cabinet between a position for mounting the disk and a position for detaching the disk according to the driving force applied from the outside;

a head driving mechanism which is moved together with the disk driving section by the disk driving section driving mechanism, and configured to move a head in the diameter direction of the disk mounted in the disk driving section according to the driving force applied from the outside;

a controlling mechanism which is engaged selectively with the tray driving mechanism, the disk driving section driving mechanism, and the head driving mechanism, and configured to successively move the tray, the disk driving section and the head in this order or in the opposite order by selectively applying the driving force from the same driving source to each driving mechanism; and

a switch driving mechanism configured to control the switch in either of the on and off states in a state with the tray reach at the pulling out reference position from the cabinet according to the contact or detachment of the member interlocked with the operation of the controlling mechanism, and to control the same in the other of the on and off states with the head reach at the reference position for recording or reproduction with respect to the disk.

2. A disk loading device according to claim 1, wherein the controlling mechanism controls such that it provides the driving force from the same driving source to the tray driving mechanism for moving the tray in the direction to be stored in the cabinet, it provides the driving force from the same driving source to the disk driving section driving mechanism in a state with the tray stored in the cabinet, and it provides the driving force from the same driving source to the head driving mechanism in a state with the disk mounted in the disk driving section for moving the head in the disk diameter direction in the case the tray pulled out from the cabinet is to be stored in the cabinet.

3. A disk loading device according to claim 2, wherein the switching driving mechanism controls the switch in either of the on and off states at the time the tray reaches at the pulling out reference position from the cabinet in a state with the driving force from

the same driving source applied to the tray driving mechanism so that the tray is moved in the direction to be stored in the cabinet.

4. A disk loading device according to claim 1,  
5 wherein the controlling mechanism controls such that it provides the driving force from the same driving source to the head driving mechanism for moving the head to the reference position of the disk, it provides the driving force from the same driving source to the disk  
10 driving section driving mechanism for moving the disk driving section in the direction moving away from the disk after arrival of the head to the reference position of the disk, and it provides the driving force from the same driving source to the tray driving  
15 mechanism for moving the tray in the direction to be pulled out from the cabinet in a state with the disk detached from the disk driving section in the case the tray stored in the cabinet is to be pulled out from the cabinet.

20 5. A disk loading device according to claim 4, wherein the switch driving mechanism controls the switch in the other state of the on and off states in a state with the head moved to the reference position of the disk by providing the driving force from the same  
25 driving source to the head driving mechanism.

6. A disk loading device according to claim 1, 2, 3, 4 or 5, wherein the controlling mechanism comprises

a slide cam to be engaged with the tray driving mechanism, the disk driving section driving mechanism and the head driving mechanism, respectively so that the driving timing of the tray driving mechanism, the disk driving section driving mechanism and the head driving mechanism is controlled by the slide cam.

7. A disk loading method comprising:

selectively providing the driving force from the same driving source to a tray driving mechanism, a disk driving section driving mechanism and a head driving mechanism for moving a tray, a disk driving section and a head successively in this order or in the opposite order; and

selectively controlling the same switch in the on and off states between a state with the tray reach at the pulling out reference position from a cabinet and a state with the head reach at the reference position for recording or reproduction with respect to a disk in a disk loading device comprising the tray driving mechanism configured to move the tray capable of placing the disk thereon between a position taken out from the cabinet and a position stored in the cabinet according to the driving force applied from the outside;

the disk driving section driving mechanism configured to move the disk driving section to mount, rotate and drive the disk placed on the tray stored in

the cabinet between a position for mounting the disk and a position for detaching the disk according to the driving force applied from the outside; and

5           the head driving mechanism which is to be moved together with the disk driving section by the disk driving section driving mechanism, and configured to move the head in the diameter direction of the disk mounted in the disk driving section according to the driving force applied from the outside.

10           8. A disk loading method according to claim 7, wherein:

          the selectively providing the driving force from the same driving source to the tray driving mechanism, the disk driving section driving mechanism and the head driving mechanism is executed by providing the driving force from the same driving source to the tray driving mechanism for moving the tray in the direction to be stored in the cabinet;

20           providing the driving force from the same driving source to the disk driving section driving mechanism in a state with the tray stored in the cabinet; and

          providing the driving force from the same driving source to the head driving mechanism in a state with the disk mounted in the disk driving section for moving the head in the disk diameter direction in the case the tray pulled out from the cabinet is to be stored in the cabinet.

9. A disk loading method according to claim 8,  
wherein the selectively controlling the switch in the  
on and off states is executed by controlling the switch  
in either of the on and off states at the time the tray  
reaches at the pulling out reference position from the  
cabinet in a state with the driving force from the same  
driving source applied to the tray driving mechanism so  
that the tray is moved in the direction to be stored in  
the cabinet.

10. A disk loading method according to claim 7,  
wherein the selectively providing the driving force  
from the same driving source to the tray driving  
mechanism, the disk driving section driving mechanism  
and the head driving mechanism is executed by providing  
the driving force from the same driving source to the  
head driving mechanism for moving the head to the  
reference position of the disk;

providing the driving force from the same driving  
source to the disk driving section driving mechanism  
for moving the disk driving section in the direction  
moving away from the disk after arrival of the head to  
the reference position of the disk; and

providing the driving force from the same driving  
source to the tray driving mechanism for moving the  
tray in the direction to be pulled out from the cabinet  
in a state with the disk detached from the disk driving  
section in the case the tray stored in the cabinet is

to be pulled out from the cabinet.

11. A disk loading method according to claim 10,  
wherein the selectively controlling the switch in the  
on and off states is executed by controlling the switch  
5 in the other state of the on and off states in a state  
with the head moved to the reference position of the  
disk by providing the driving force from the same  
driving source to the head driving mechanism.

12. A disk loading method according to claim 7, 8,  
10 9, 10 or 11, wherein the selectively providing the  
driving force from the same driving source to the tray  
driving mechanism, the disk driving section driving  
mechanism and the head driving mechanism is executed by  
providing a slide cam to be engaged with the tray  
15 driving mechanism, the disk driving section driving  
mechanism and the head driving mechanism, respectively  
so that the driving timing of the tray driving  
mechanism, the disk driving section driving mechanism  
and the head driving mechanism is controlled by the  
20 slide cam.

13. An optical disk apparatus comprising:

a tray driving mechanism configured to move a tray  
capable of placing a disk thereon between a position  
taken out from a cabinet and a position stored in the  
25 cabinet according to the driving force applied from the  
outside;

a disk driving section driving mechanism

configured to move a disk driving section to mount,  
rotate and drive the disk placed on the tray stored in  
the cabinet between a position for mounting the disk  
and a position for detaching the disk according to the  
5 driving force applied from the outside;

a head driving mechanism which is to be moved  
together with the disk driving section by the disk  
driving section driving mechanism, and configured to  
move a head in the diameter direction of the disk  
10 mounted in the disk driving section according to the  
driving force applied from the outside;

a controlling mechanism which is to be engaged  
selectively with the tray driving mechanism, the disk  
driving section driving mechanism, and the head driving  
15 mechanism, and configured to successively move the  
tray, the disk driving section and the head in this  
order or in the opposite order by selectively applying  
the driving force from the same driving source to each  
driving mechanism; and

20 a switch driving mechanism configured to control  
the switch in either of the on and off states in a  
state with the tray reach at the pulling out reference  
position from the cabinet according to the contact or  
detachment of the member interlocked with the operation  
25 of the controlling mechanism, and to control the same  
in the other of the on and off states with the head  
reach at the reference position for recording or



reproduction with respect to the disk;

wherein a recording or reproducing operation is executed with respect to the disk in a state with the switch controlled in the other state of the on and off states by the arrival of the head to the reference position for executing the recording or reproducing operation with respect to the disk by the switch driving mechanism.

14. An optical disk apparatus according to claim 13, wherein the controlling mechanism controls such that it provides the driving force from the same driving source to the tray driving mechanism for moving the tray in the direction to be stored in the cabinet, it provides the driving force from the same driving source to the disk driving section driving mechanism in a state with the tray stored in the cabinet, and it provides the driving force from the same driving source to the head driving mechanism in a state with the disk mounted in the disk driving section for moving the head in the disk diameter direction in the case the tray pulled out from the cabinet is to be stored in the cabinet.

15. An optical disk apparatus according to claim 14, wherein the switching driving mechanism controls the switch in either of the on and off states at the time the tray reaches at the pulling out reference position from the cabinet in a state with the

driving force from the same driving source applied to the tray driving mechanism so that the tray is moved in the direction to be stored in the cabinet.

5       16. An optical disk apparatus according to  
claim 13, wherein the controlling mechanism controls  
such that it provides the driving force from the same  
driving source to the head driving mechanism for moving  
the head to the reference position of the disk, it  
provides the driving force from the same driving source  
10       to the disk driving section driving mechanism for  
moving the disk driving section in the direction moving  
away from the disk after arrival of the head to the  
reference position of the disk, and it provides the  
driving force from the same driving source to the tray  
15       driving mechanism for moving the tray in the direction  
to be pulled out from the cabinet in a state with the  
disk detached from the disk driving section in the case  
the tray stored in the cabinet is to be pulled out from  
the cabinet.

20       17. An optical disk apparatus according to  
claim 16, wherein the switch driving mechanism controls  
the switch in the other state of the on and off states  
in a state with the head moved to the reference  
position of the disk by providing the driving force  
25       from the same driving source to the head driving  
mechanism.

18. An optical disk apparatus according to

claim 13, 14, 15, 16, or 17, wherein the controlling mechanism comprises a slide cam to be engaged with the tray driving mechanism, the disk driving section driving mechanism and the head driving mechanism, respectively so that the driving timing of the tray driving mechanism, the disk driving section driving mechanism and the head driving mechanism is controlled by the slide cam.